



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,164	08/21/2003	Michael Trunz	072261.00006	7613
60474	7590	01/19/2007		
GRAY ROBINSON, P.A. 401 E. LAS OLAS BLVD. SUITE 1850 FT. LAUDERDALE, FL 33301			EXAMINER CHON, PETER	
			ART UNIT	PAPER NUMBER
			2112	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/19/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/645,164

Applicant(s)

TRUNZ ET AL.

Examiner

Peter Chon

Art Unit

2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 8/21/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 5/24/2006 & 11/20/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

Claim 6 is objected to because of the following informalities: The dependent claim has not made clear the independent claim as to which it is dependent on. The phrase, "claimed in one of claim 1" must be changed to make definite the independent claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5-7, and 11 are rejected under 35 U.S.C 102(b) as being anticipated by Baker et al., USPAT 5869896.

As to claim 1, Baker discloses in figure 8, a sensor module comprising:

- a housing having interior walls (45)

- a CCD sensor located within said housing (21)
- a plate-like carrier unit disposed between said wall surface and said sensor (23).

As to claim 5, Baker discloses said carrier unit fixed to said housing by use of solder joints (the use of solder bumps to both electrically and physically connect said plate-like carrier substrate to said housing (col. 6, lines 42-44)).

As to claim 6, Baker discloses a gap formed between said carrier unit and said housing (in figure 8, said plate-like carrier substrate fixed to said housing is shown, comprising a gap formed between the two, via a quasi-punctiform connection (51)).

As to claim 7, Baker discloses that said CCD sensor unit (23) is fixed to said carrier unit (23) by using adhesive (col. 6, lines 44-45).

As to claim 11, Baker discloses said housing (45) comprising a PGA housing (in figure 8, a sensor module comprising electrical contacts (49) is shown and Baker further discloses the fact that the electrical contacts may consist of several types of interconnects, including pins (col. 6, lines 22-25)).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 3, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker et al. in view of Boyle et al, USPAT 6020646.

As to claim 2, Baker discloses a sensor module package as recited above, but fails to specify the need for a similarity in thermal expansion coefficients between the CCD sensor and the plate-like substrate to which the CCD is attached.

Boyle discloses in figure 1, a circuit device comprising a CCD sensor (100), mechanically attached to a carrier (130), which is further mounted onto a header (150). Boyle further discloses the need for similar thermal expansion coefficients between the CCD sensor and the carrier to which the CCD is mounted (col. 5, lines 50-53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify the sensor module of Baker, by adding the requirement of having similar thermal expansion coefficients between the CCD and carrier, as taught by Boyle, because having similar thermal coefficients would minimize the stresses and warping of the CCD die when mounted on the carrier.

As to claim 3, Baker discloses a sensor module package as recited above, but fails to specify the material used to create the plate-like carrier substrate.

Boyle discloses the choice material used for the said carrier substrate to be, among other possible materials, aluminum nitride (col. 5, lines 56-57).

As to claim 4, as stated above, Baker discloses a sensor module package. In addition, in figure 8, Baker discloses the connection of the said plate-like carrier substrate onto the housing via a quasi-punctiform solder connection (51).

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker et al, in view of Dhaka, USPAT 3757127.

As to claim 8, Baker discloses in figures 7 and 8, the placement of a transparent cover (43, col. 6, lines 10-13) onto said housing (45). However, Baker fails to specify whether or not the housing (45) includes a glass plate.

Dhaka discloses a CCD sensor in figure 1, and explicitly states that the CCD sensor is typically a component sealed off by glass (col. 2, lines 1-4).

Therefore, it would be obvious for one of ordinary skill in the art, at the time in which the invention was made, to substitute the glass cover of Dhaka with the transparent cover of Baker, in order to protect the CCD sensor from damage.

As to claim 9, Baker as modified by Dhaka discloses as stated above, a sensor module package. As shown in figures 7 and 8, the sensor module package is hermetically sealed between a transparent cover (which is substituted with the glass of Dhaka) (43) and cavity substrate (45).

Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker et al, in view of Dhaka, and further in view of Matsumoto et al., USPAT 5168126.

As to claim 10, Baker as modified by Dhaka discloses a sensor module package as cited above, but fails to specify the acceptable difference in thermal expansion coefficients between the said transparent cover and the hermetically sealing glass plate.

Matsumoto reveals a semiconductor element container package in figure 1. In the package, semiconductor element (4) is sealed by a housing (1) and lid (2). Said

Art Unit: 2112

housing and lid are bonded onto glass (6) in order to seal the package. Matsumoto explicitly states that the said housing and lid can be comprised of aluminum oxide, which has a thermal expansion coefficient of 65×10^{-7} to 75×10^{-7} , due to its substantial similarity with said glass' thermal expansion coefficient of 50×10^{-7} to 70×10^{-7} (abstract, col. 6, lines 1-5; col. 10, lines 57-63). The combination of glass and this housing material, among others mentioned, would be optimal due to substantially similar thermal expansion coefficients.

It would be obvious to one skilled in the art, at the time in which the invention was made, to incorporate Matsumoto's thermal expansion coefficients (and suggested materials that went along with the coefficients) into the device of Baker as modified by Dhaka. The difference in thermal expansion coefficients between the glass and the housing material would be in effect, insignificant, leading to the generation of thermal stress at a minimum.

As to claim 12, Baker discloses a sensor module package as cited above, but fails to specify the material used to form said housing.

Matsumoto teaches that the said housing should consist of aluminum oxide due to its thermal expansion coefficient, which is substantially similar to that of hermetically sealing glass (col. 10, lines 57-63).

Therefore, it would be obvious to one of ordinary skill in the art, to make the housing out of the taught aluminum oxide, because the similarities in thermal coefficient expansion between said housing and glass would be substantially similar, leading to less stress on the CCD.

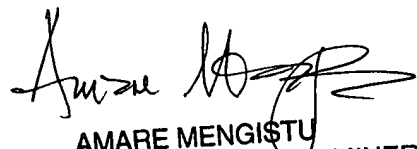
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Chon whose telephone number is 571-272-1556. The examiner can normally be reached on 7:30-5:00, Mon-Fri, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on 571-272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

P.C
1/10/2007


AMARE MENGISTU
SUPERVISORY PATENT EXAMINER